



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,647	08/07/2003	Jun-hee Choi	030681-568	8798
21839	7590	03/12/2004	EXAMINER	
BURNS DOANE SWECKER & MATHIS L L P			COLON, GERMAN	
POST OFFICE BOX 1404			ART UNIT	
ALEXANDRIA, VA 22313-1404			PAPER NUMBER	

2879

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/635,647

Applicant(s)

CHOI ET AL.

Examiner

German Colón

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/754,275.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 080703.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Page 5, line 1, refers to a gate electrode **160**; however, on line 4, reference number **140** identifies said gate electrode.

Page 6, line 3, refers to a focus gate electrode **190**; however, on line 4, reference number **191** identifies said focus gate electrode.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Choo (US 5,910,704).

Regarding claim 1, Choo discloses a field emission device comprising:

a substrate **10**;

a cathode **11** formed over the substrate;

micro-tips **15** having nano-sized surface features, formed on the cathode;

Art Unit: 2879

a gate insulating layer **13A** with wells **131A** each of which a single micro-tip is located in, the gate insulating layer formed over the substrate;

a gate electrode **14A** with gates **141A** aligned with the wells such that each of the micro-tips is exposed through a corresponding gate, the gate electrode formed on the gate insulating layer;

a focus gate insulation layer **13B** having openings each of which one or more gates correspond to, the focus gate insulation layer formed on the gate electrode; and

a focus gate electrode **14B** with focus gates aligned with the openings of the focus gate insulation layer, the focus gate electrode formed on the focus gate insulation layer.

Referring to claim 2, Choo discloses a resistor layer **12** formed over the cathode.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Yamaguchi et al. (US 5,955,850).

Regarding claim 1, Yamaguchi discloses a field emission device comprising (see at least Fig. 3):

a substrate **1**;

a cathode **2** formed over the substrate;

micro-tips **5** having nano-sized surface features, formed on the cathode;

a gate insulating layer **3** with wells each of which a single micro-tip is located in, the gate insulating layer formed over the substrate;

a gate electrode **4** with gates aligned with the wells such that each of the micro-tips is exposed through a corresponding gate, the gate electrode formed on the gate insulating layer;

Art Unit: 2879

a focus gate insulation layer 3' having openings each of which one or more gates correspond to, the focus gate insulation layer formed on the gate electrode; and

a focus gate electrode 7 with focus gates aligned with the openings of the focus gate insulation layer, the focus gate electrode formed on the focus gate insulation layer.

Prior Art of Record

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Okamoto (US 5,850,120) discloses a field emission device which reads on at least claim 1.

Contact Information

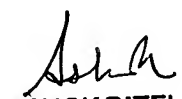
Any inquiry concerning this communication or earlier communications from the examiner should be directed to German Colón whose telephone number is 571-272-2451. The examiner can normally be reached on Monday thru Thursday, from 8:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2879

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


gc


ASHOK PATEL
PRIMARY EXAMINER